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| 09/865,053 | 05/23/2001 | Eiji Mayumi | 81868.0030 | 2301 |

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EXAMINER

ELKASSABGI, HEBA

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2834

DATE MAILED: 06/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/865,053

Applicant(s)

MAYUMI, EIJI

Examiner

Heba Elkassabgi

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 13 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA).
2. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shaped casing (10), which encloses a stator (26) having a coil bobbin (48 and 50) having winding sections (48c and 50c). However, Yamamoto et al. does not disclose a terminal section protruding from a curled case.
3. Applicants Prior Art discloses in Figures 5 and 7 a stepping motor, which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

4. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with the winding section.
5. In regards to Claim 2, Yamaoto et al. and Applicants Prior Art discloses the claimed invention except for the opening arc angle sections. It would have been obvious to one having ordinary skill in the art at the time the invention was made to define the opening section by less than one half of an entire periphery of a circle or less than 180 degrees. since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.
6. In regards to Claim 3, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.
7. Claims 4, 5, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Takano et al. (U.S. Patent 5705864)
8. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shaped casing (10), which encloses a stator (26) having a coil bobbin (48 and 50)

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having winding sections (48c and 50c). However, Yamamoto et al. does not disclose a terminal section protruding from a curled case.

9. Applicants Prior Art discloses in Figures 5 and 7 a stepping motor, which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

10. Matsushita et al. discloses in Figure 1 a stepping motor in which the stator yoke (13) is made of ferromagnetic material for the purpose of improving the dissipation of heat to enable the input power supplied to the motor.

11. Takano et al. in Figure 9 a stepping motor having a stator yolk (53a and 53b) is spot welded to the case (55) in order to stabilize the motor and the characteristics thereof and improve quality.

12. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with the winding section, Matsushita et al. for the purpose of improving the dissipation of heat to enable the input power supplied to the motor, and Takano et al. to stabilize the motor and the characteristics thereof and improve quality.

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13. In regards to Claims 4 and 5, Yamaoto et al., Applicants Prior Art, Matsushita et al. and Takano et al., discloses the claimed invention except for the opening arc angle sections. It would have been obvious to one having ordinary skill in the art at the time the invention was made to define the opening section by less than one third of the entire periphery of a circle or less than 120 degrees and an opening section one sixth of the entire periphery of a circle or 60 degrees or greater. Since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

14. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Aoshima et al. (U.S. Patent 6255749 B1)

15. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shaped casing (10), which encloses a stator (26) having a coil bobbin (48 and 50) having winding sections (48c and 50c). However, Yamamoto et al. does not disclose a terminal section protruding from a curled case.

16. Applicants Prior Art discloses in Figures 5 and 7 a stepping motor, which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

17. Aoshima et al. in Figure 2 a motor having a frame (23) fixed to a stator (19) in an axial direction where the rotor shaft (7) is supported by a frame (23) for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

18. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with the winding section and Aoshima et al. for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Aoshima et al. (U.S. Patent 6255749 B1) and Hanazumi et al. (U.S. Patent 6046519)

20. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shaped casing (10), which encloses a stator (26) having a coil bobbin (48 and 50) having winding sections (48c and 50c). However, Yamamoto et al. does not disclose a terminal section protruding from a curled case.

21. Applicants Prior Art discloses in Figures 5 and 7 a stepping motor, which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

22. Hanazumi et al. discloses in Figure 1 a stepping motor which a cover (sleeve) (5) passing through a rotor shaft (4) having an aperture (5b) formed with the stator in order for the motor to have a high precision torque formation.

23. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with the winding section; along with Aoshima et al. for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur and Hanazumi et al. in order for the motor to have a high precision torque formation.

24. In regards to Claim 7, Yamamoto et al., Applicants Prior Art, and Aoshima et al. discloses the claimed invention except for a cylindrical sleeve formed of a material with hardness lower than the rotor shaft. It would have been an obvious matter of design choice to have the material of the cylindrical sleeve section to be of a lower hardness than the rotor shaft, since the applicant has not disclosed that the type of material solves any stated problem or is for any particular purpose.

25. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Aoshima et al. (U.S. Patent 6255749 B1)

26. Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Aoshima et al. (U.S. Patent 6255749 B1).

27. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shaped casing (10), which encloses a stator (26) having a coil bobbin (48 and 50) having winding sections (48c and 50c). However, Yamamoto et al. does not disclose a terminal section protruding from a curled case.

28. Applicants Prior Art discloses in Figures 5 and 7 a stepping motor having a rotor (52) with a rotor shaft (53) disposed within an internal peripheral surface of the stator (51) which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

29. Aoshima et al. in Figure 2 a motor having a frame (23) fixed to one end of the stator (19) in an axial direction where the rotor shaft (7) is supported by a frame (23) for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

30. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with

the winding section and Aoshima et al. for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

31. Claims 10, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Aoshima et al. (U.S. Patent 6255749 B1) and Hanazumi et al. (U.S. Patent 6046519)

32. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shaped casing (10), which encloses a stator (26) having a coil bobbin (48 and 50) having winding sections (48c and 50c). However, Yamamoto et al. does not disclose a terminal section protruding from a curled case.

33. Applicants Prior Art discloses in Figures 5 and 7 a stepping motor, which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

34. Aoshima et al. in Figure 2 a motor having a frame (23) fixed to a stator (19) in an axial direction where the rotor shaft (7) is supported by a frame (23) for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

35. Hanazumi et al. discloses in Figure 1 a stepping motor which a cover (sleeve) (5) passing through a rotor shaft (4) having an aperture (5b) formed with the stator in order for the motor to have a high precision torque formation.

36. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with the winding section; along with Aoshima et al. for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur and Hanazumi et al. in order for the motor to have a high precision torque formation.

37. In regards to Claim 10, Yamamoto et al., Applicants Prior Art, Aoshima et al., and Hanazumi et al., discloses the claimed invention except for the choice of material for the cylindrical sleeve. It would have been an obvious matter of design choice to have a cylindrical sleeve formed from a material that has a lower hardness than that of the rotor shaft, since the applicant has not disclosed that material choice solves any stated problem or is for any particular purpose.

38. In regards to Claims 11 and 12 Yamamoto et al., Applicants Prior Art, Aoshima et al., and Hanazumi et al., discloses the claimed invention except for the length of the cylindrical sleeve. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the cylindrical sleeve section having an axial

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length generally identical or greater than an axial length of the passing aperture in the axial direction., since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

39. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Aoshima et al. (U.S. Patent 6255749 B1) and Matsushita et al. (U.S. Patent 4841190) and Takano et al. (U.S. Patent 5705864)

40. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shape Applicants Prior Art discloses in Figures 5 and 7 a stepping motor, which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

41. Aoshima et al. in Figure 2 a motor having a frame (23) fixed to a stator (19) in an axial direction where the rotor shaft (7) is supported by a frame (23) for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

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42. Matsushita et al. discloses in Figure 1 a stepping motor in which the stator yoke (13) is made of ferromagnetic material for the purpose of improving the dissipation of heat to enable the input power supplied to the motor.

43. Takano et al. in Figure 9 a stepping motor having a stator yolk (53a and 53b) is spot welded to the case (55) in order to stabilize the motor and the characteristics thereof and improve quality.

44. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with the winding section, Aoshima et al. for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft, Matsushita et al. for the purpose of improving the dissipation of heat to enable the input power supplied to the motor, and Takano et al. to stabilize the motor and the characteristics thereof and improve quality.

45. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent 5121017) and in further view of Applicants Prior Art (APA) and Aoshima et al. (U.S. Patent 6255749 B1)

46. Yamamoto et al. discloses in Figure 3 a stepping motor, which comprises of a C-shaped casing (10), which encloses a stator (26) having a coil bobbin (48 and 50) having winding sections (48c and 50c). However, Yamamoto et al. does not disclose a terminal section protruding from a curled case.

47. Applicants Prior Art discloses in Figures 5 and 7 a stepping motor, which has a terminal section (63) protruding in a radial direction of the coil bobbin through a window in a casing in order to connect the terminal section to the winding sections.

48. Aoshima et al. in Figure 2 a motor having a frame (23) fixed to a stator (19) in an axial direction where the rotor shaft (7) is supported by a frame (23) for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

49. It would have been obvious to one of ordinary skill in the art to combine Yamamoto et al. with Applicants Prior Art in order to connect the terminal section with the winding section and Aoshima et al. for the purpose of the rotor shaft moves stably so that a hysteresis difference due to the rotary direction of rotor shaft does not occur.

In regards to Claim 16 Yamamoto et al., Applicants Prior Art, and Aoshima et al., discloses the claimed invention except for the measurement of the cylindrical sleeve in regards to the aperture. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the cylindrical sleeve section measurement in the axial direction that is generally identical or greater than a measurement of the passing aperture, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

Claims 13 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heba Elkassabgi whose telephone number is (703) 305-2723. The examiner can normally be reached on M-Th (6:30-3:30), and every other Friday.

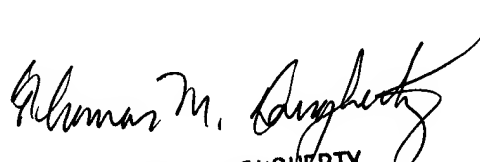
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

HYE

June 24, 2002


THOMAS M. DOUGHERTY
PRIMARY EXAMINER
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2800